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Influence of word prediction settings (number of words displayed and frequency of use) on text input speed in persons with cervical spinal cord injury

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Background Different devices have been developed to enable persons with cervical spinal cord injury (SCI) to use a computer. However, text input speed (TIS) remains low for these persons. Several methods have been developed to increase TIS, such as word prediction software (WPS). Data in the literature are discordant regarding the effect of WPS on TIS, with decreases of up to 71% in some studies and increases of up to 45% in others. The main reason suggested for these differences is the cognitive load caused by the visual searching for words in the prediction list. It is thus likely that the number of words in the prediction list influences TIS. Moreover, WPS can be customized using different settings. For example, the prediction list can be ordered according to the frequency of occurrence of words in the language (frequency of use) and the automatic learning of new words can be activated. Until now, no studies in the literature have evaluated the influence of these parameters on TIS. The aims of this study are to determine if the number of words displayed in the WPS list and activation of the frequency of use and automatic learning parameters of WPS affects TIS in people with tetraplegia.
Methods Forty-five persons with cervical SCI between C4 and C8 Asia AIS A or B and who were computer users were included. For the parameter "Number of Words displayed", TIS was evaluated during 4 10-minute copying tasks (without WPS, with a display of 3 6 8 predicted words). For the parameter "frequency of use", TIS was evaluated during 3 copying tasks (without WPS (WITHOUT), with automatic learning of words and frequency of use desactivated (NOT_ACTIV) or activated (ACTIV)).
Results There was no effect of the number of words displayed in a word prediction list on TIS, however perception of TIS differed according to lesion level. Use of word prediction software with activation of frequency of use and automatic learning increased TIS in participants with high-level tetraplegia.
Conclusion For participants with low-level tetraplegia, use of word prediction software with frequency of use and automatic learning activated only decreased the number of errors.
Keywords Cervical spinal cord injury; Text input speed; Word prediction software; Frequency of use; Number of words displayed; Computer
Disclosure of interest The authors have not supplied their declaration of conflict of interest.

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Posters

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Text input speed in people with cervical spinal cord injury

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The aim of this prospective clinical study is to determine text input speed (TIS) in people with cervical Spinal Cord Injury (SCI) and to study the influence of participant's characteristics on TIS.
People with cervical SCI were included if their level of injury was between C4 and C8 Asia AIS A or B, and were computer users. Each participant underwent a single evaluation using their usual computer access devices. TIS was evaluated during a 10-minute copying task. The relationship between participant's characteristics, computer access device and TIS were analyzed using a Two-Way ANOVA.
In the study, 35 participants with cervical SCI and 21 able-bodied people were included. Participants with cervical SCI had a Median TIS was 11 [8.1; 17.2] wpm and able-bodied participants of 23.5 [18.1; 29.7] wpm ($p = 0.001$). Participants with SCI lesions at or above C5 had a median TIS of 12.2 [4.5; 13] wpm and those with lesions below C5 had a median TIS of 10.4 [9.2; 18] wpm ($p = 0.38$). The Two-Way ANOVA showed that only the type of computer access device significantly influence TIS. Surprisingly, none of the subject's characteristics among them the level of cervical lesion did not affect TIS.
Keywords Cervical spinal cord injury; Text input speed; Participant's characteristics; Computer access device
Disclosure of interest The authors have not supplied their declaration of conflict of interest.

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Milking effect on lymphoedema fore-arm: Manual versus pneumatic drainages

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Introduction Milking effect is widely search in manual drainage technique. Since 1993, some pumps can work in a similar retrograde mode.
Objective Our aim was to compare the effects of three light retrograde drainage options: 2 pneumatic and one manual one's.
Method We used a fragmentation program with a seven-compartment i-Press® 10th serial (Mazet Med™, Fr); with a Lymphassist® program with a 12-compartment Hydroven12® (Flowtron™, GB); and a manual drainage are successively and randomly carried out on 9 women (71 years old) with an old (14 years) persistent upper limb lymphoedema that appeared 7 years after radio-surgical treatment against breast cancer. All volume variations are recorded continuously with a plethysmograph (JSI™, SU4). Mercury gauges are fitted 4 inches below the elbow. The protocol of pneumatic drainages consisted of a standardised retrograde approach with constant pressure (40 mm Hg) (without regressive pressure) at a single to double-level of compression.
Results By use of Kruskal and Wallis, one-way ANOVA on ranks, the effect of arm drainage on the fore-arm was +0.04 ml/100 mloed (med 0 [+1 to −1]) when the drainage was applied manually, +0.07 ml/100 mloed (med 0 [0 to +1.25]) using Lymphassist® and −0.17 ml/100 mloed (med 0 [0 to −1.2]) using the iPress pneumatic pump. When drainage takes up the elbow and the fore-arm, at 4 inch below the elbow, the results were respectively −0.64 ml/100 mloed (med 0 [0 to −2]), +0.07 ml/100 mloed (med 0 [0 to −1.25]) and 0.67 ml/100 mloed (med −0.53 [0 to −1]).